



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/725,572    11/30/00    PARK

K    2658-0246P

002292    MMC2/1011  
BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH VA 22040-0747

EXAMINER

ROMAN, A

ART UNIT

PAPER NUMBER

2812

DATE MAILED:

10/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

## Office Action Summary

Application No.

09/725,572

Applicant(s)

PARK, KEUN NO

Examiner

Angel Roman

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Okumura et al. U.S. Patent 5,015,330.

Okumura et al. discloses a method to prevent generation of contaminating particles in a chamber, the method comprising; mounting a substrate within a chamber; evacuating an ordinary gas within said chamber thereby decreasing a pressure within the chamber (see column 10, lines 65-68); injecting a treatment gas into said chamber to treat a surface of a substrate; and withdrawing said treatment gas from said chamber while injecting a moisture displacing gas comprising nitrogen into said chamber (see column 11, lines 1-37).

Art Unit: 2812

3. Claims 1, 4, 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Kannan et al. U.S. Patent 6,091,056.

Kannan et al. discloses a method of preventing generation of particles in a chamber, the method comprising; mounting a substrate within a chamber of a gas-exposure equipment; decreasing a pressure within the chamber; injecting a surface treatment gas including HMDS gas into the chamber; and drawing out the surface treatment gas from the chamber while injecting a nitrogen gas into the chamber (see column 2, lines 60-67-column 3, lines 1-16). The step of injecting the surface treatment gas converts the surface of the substrate into an organic material.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kannan et al. U.S. Patent 6,091,056 in view of Bellows et al. U.S. Patent 5,728,602.

Kannan et al. is applied as above but lacks anticipation on disclosing information regarding reaching a pressure equal or higher than an atmospheric pressure in the

Art Unit: 2812

chamber when a surface treatment gas is drawn out by injecting a moisture displacing gas into the chamber.

With respect to reaching atmospheric pressure in a chamber when a surface treatment gas is drawn out by injecting a moisture displacing gas into the chamber, Bellows et al discloses introducing nitrogen gas into a chamber until ambient pressure is attained (see column 4, lines 36-49). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to purge a surface treatment gas with nitrogen to cause the pressure in the chamber to become equal to an atmospheric pressure in the primary reference of Kannan et al. because this will allow subtraction of substrates from the chamber (see column 1, lines 56-59).

Regarding drawing out a surface treatment gas causing a pressure in a chamber to become higher than an atmospheric pressure, it is not patentable subject matter to discover the optimum processing ranges, i.e. pressure, using routine experimentation. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to cause a pressure in a chamber to become higher than an atmospheric pressure when a surface treatment gas is drawn out by injecting a moisture displacing gas into the chamber in the primary reference of Kannan et al. because this will contribute to a dislodging and removal of contaminated particles (see column 5, lines 50-54).

The subject matter in claims 6-8 is drawn to an apparatus (chamber). No weight is given to apparatus limitations in method claims (see *In re Edwards* 128 USPQ 387 (CCPA 1961)), therefore no patentable weight is given to claims 6-8. Furthermore it is

Art Unit: 2812

well known to use chambers comprising evacuation lines and ejection lines to supply and evacuate gases into and out of a chamber, therefore it would have been obvious to a person having ordinary skills in the art at the time the invention was made to use an ejection line to apply the nitrogen through an ejection line and evacuation lines to evacuate a gas in the primary reference of Kannan et al. because is a conventional method use in the art to introduce or extract gases from a chamber.

6. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. U.S. Patent 5,015,330 in view of Kannan et al. U.S. Patent 6,091,056 and Bellows et al. U.S. Patent 5,728,602.

Okumura et al. is applied as above but lacks anticipation on using a treatment gas comprising HMDS; disclosing a pressure within a chamber rising to be equal to or above an atmospheric pressure as a moisture displacing gas is injected into said chamber.

Regarding using a treatment gas comprising HMDS, Kannan et al. discloses using an HMDS prime process during a semiconductor wafer processing. In view of this disclosure it would have been obvious to a person having ordinary skills in the art at the time the invention was made to use a treatment gas comprising HMDS as disclose in Kannan et al. in the primary reference of Okumura et al. because it would improve adhesion properties (see column 3, lines 12-14).

With respect to reaching atmospheric pressure in a chamber when a surface treatment gas is drawn out by injecting a moisture displacing gas into the chamber,

Art Unit: 2812

Bellows et al discloses introducing nitrogen gas into a chamber until ambient pressure is attained (see column 4, lines 36-49). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to purge a surface treatment gas with nitrogen to cause the pressure in the chamber to become equal to an atmospheric pressure in the primary reference of Okumura et al. because this will allow subtraction of substrates from the chamber (see column 1, lines 56-59).

Regarding drawing out a surface treatment gas causing a pressure in a chamber to become higher than an atmospheric pressure, it is not patentable subject matter to discover the optimum processing ranges, i.e. pressure, using routine experimentation. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to cause a pressure in a chamber to become higher than an atmospheric pressure when a surface treatment gas is drawn out by injecting a moisture displacing gas into the chamber in the primary reference of Okumura et al. because this will contribute to a dislodging and removal of contaminated particles (see column 5, lines 50-54).

7. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kannan et al. U.S. Patent 6,091,056 in view of the prior art disclosed in pages 1-4 of the specification [hereinafter Prior Art].

Kannan et al. is applied as above but lacks anticipation processing a substrate comprising a thin film transistor including at least one of a gate electrode, a source electrode, a drain electrode, and a pixel electrode; and processing a substrate

Art Unit: 2812

comprising a color filter substrate including at least one of a color filter and a black matrix.

Regarding processing a substrate comprising a thin film transistor including at least one of a gate electrode, a source electrode, a drain electrode, and a pixel electrode, Prior Art discloses processing a substrate comprising a thin film transistor including at least one of a gate electrode, a source electrode, a drain electrode, and a pixel electrode (see figure 1). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to process a substrate comprising a thin film transistor including at least one of a gate electrode, a source electrode, a drain electrode, and a pixel electrode as disclose in Prior Art in the primary reference of Kannan et al. because these are conventional integrated circuits devices use in the semiconductor industries.

With respect to processing a substrate comprising a color filter substrate including at least one of a color filter and a black matrix, Prior Art discloses processing a substrate comprising a color filter substrate including at least one of a color filter and a black matrix (see page 2, lines 20-25). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to process a substrate comprising a color filter substrate including at least one of a color filter and a black matrix as disclose in Prior Art in the primary reference of Kannan et al. because these are conventional integrated circuits devices use in the semiconductor industries.



***Response to Arguments***

8. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimizu et al. discloses a method of restoring a pressure in a chamber by introducing an inert gas. Lee discloses a method of forming a thin film in a semiconductor device.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

• Application/Control Number: 09/725,572  
Art Unit: 2812

Page 9

AR  
October 8, 2001



RICHARD BOOTH  
PRIMARY EXAMINER